



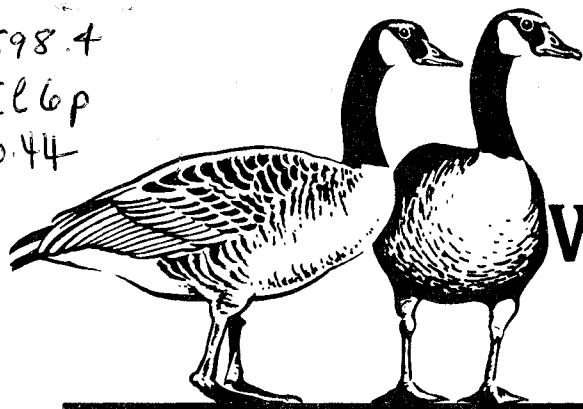
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WATERFOWL PROGRAM

ILLINOIS DEPARTMENT OF CONSERVATION
DIVISION OF FISH AND WILDLIFE RESOURCES

NATURAL HISTORY SURVEY

EVALUATION OF EXPERIMENTAL ZONING FOR DUCK HUNTING

JAN 11 1984

IN ILLINOIS, 1980-1982

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Abstract: The effects of experimentally dividing Illinois into a Northern Zone (20% of the state), Central Zone (55%), and Southern Zone (25%) for duck hunting were evaluated in 1980-1982. The statewide harvest did not change according to U.S. Fish & Wildlife Service surveys, but decreased 8% according to Illinois Department of Conservation data, the average of 1980-1982 versus the average for 1974-1976. Harvest of key species reflected the following changes: mallard decreased 9%, black duck decreased 11%, and wood duck increased 28%. The increase in wood duck harvest was due more to a plurality of mallards, and perhaps other factors, than to zoning. Changes in harvest of redhead and canvasback could not be assessed. Resident hunters expended more than 90% of their activities in the same zone in which they resided. In the Northern Zone, where hunting began and ended 8-9 days earlier than normal, days afield increased 33%, harvest increased 18-36%, and hunting success decreased 12%. In the Southern Zone, where hunting began and ended 7 days later than normal, days afield decreased 1-27%, harvest decreased 46-53%, and success decreased 36-48%. Zoning may be useful for increasing recreational opportunities in northern Illinois, but it is of questionable value for southern Illinois.

The traditional system of a single, statewide duck season in Illinois has inherent shortcomings as a consequence of the state's long north-south dimensions. Migrating waterfowl arrive in northern Illinois 2-3 weeks earlier than in central and southern portions of the state. Season dates selected for central Illinois are unsatisfactory to hunters in both northern and southern areas, which leads to hunter dissatisfaction.

In 1977, the Illinois Department of Conservation (DOC) and U.S. Fish & Wildlife Service (FWS) entered into an agreement to experimentally zone Illinois for purposes of setting the duck and coot hunting season. The state

was divided into a Northern Zone (75% of the state) and a Southern Zone (25%) for the 1977 through 1979 seasons. The results of this experiment were evaluated in an earlier report (Anderson 1980). In 1980, the DDC and FWS agreed to another 3-year experiment, in which Illinois would be divided into a Northern Zone (20% of the state), Central Zone (55%), and Southern Zone (25%) (Fig. 1). The results of this experiment are evaluated in the present report.

In 1980-1982, hunting began on 12-14 October in the Northern Zone, 21-23 October in the Central Zone, and 28-30 October in the Southern Zone (Table 1). The season was 50 days long in each year. For purposes of comparison, the seasons in 1974 through 1976 also extended for 50 days. The daily bag limit was determined by the point system in all years, which allowed a maximum of 3 or 4 mallards (Table 1).

As stated in the Memorandum of Agreement between the DDC and the FWS, "This project will evaluate zoning to determine its usefulness for managing waterfowl hunting in Illinois. Zoning is not intended to increase the statewide waterfowl harvest or change the species composition . . . Harvest data from the 3 experimental seasons will be compared with similar data from previous seasons to determine whether the size or species composition of statewide harvests have been affected by zoning. If harvest increases exceeding 10% occur for either total ducks or for a key species (mallard, black duck, wood duck, canvasback, redhead), penalties in days of season length for any future zoned seasons will be imposed sufficient to restore harvests to historic levels."

METHODS

Information used in making this evaluation separates into 3 categories: (1) waterfowl population data, (2) waterfowl harvest data, and (3) hunter

activity data. In most instances, data collected in 1980-1982 were compared with data for 3 previous years (1974-1976), when zoning was not in effect.

Waterfowl inventories (aerial censuses) were conducted by the Illinois Natural History Survey under the supervision of F.C. Bellrose and S.P. Havera. As in past years, inventories were made at 1 or 2 week intervals during the fall of 1980-1982 in the Northern Zone (northeast Illinois and Mississippi River), Central Zone (Illinois River, Mississippi River, and Carlyle Lake), and Southern Zone (Rend Lake) (Fig. 2). Carlyle and Rend lakes are large (26,000 and 18,000 acres) U.S. Corps of Engineers reservoirs that are only 45 miles apart. Because of their size, close proximity to the line dividing the Central and Southern zones, similar topography, heavy waterfowl use, and popularity among hunters, these lakes are considered an "acid" test for evaluating the effects of zoning on waterfowl harvest and hunter activity.

Harvest information was obtained from the FWS waterfowl harvest surveys and waterfowl parts collection surveys (Carney et al. 1978 and unpublished data), U.S. Forest Service harvest surveys (Tom Neal, pers. commun.), DOC harvest surveys (Ellis 1982 and unpublished data; Anderson 1983 and unpublished data), and DOC check station and bag check data (Kennedy et al. 1974; Hamer and Arthur 1976; Roetker and Anderson 1977; Dennis Thornburg, unpublished data, pers. commun.). The DOC controls approximately 40 public waterfowl areas that are operated primarily for duck hunting; accurate data were obtained on hunter activity and waterfowl harvest at check stations or via bag checks on 16 of the more important of these areas for the years 1974-1976 and 1980-1982. In addition, the DOC estimates annual harvest of, and hunting effort directed toward, ducks and other game species via a mail questionnaire (Ellis 1982). Finally, the DOC initiated a waterfowl hunting mail questionnaire beginning with the 1981 season (Anderson 1983).

Hunter activity data were available for the 16 DDC controlled areas for 1974-1976 and 1980-1982. Hunting pressure at Carlyle Lake and at Rend Lake were examined relative to opening day, first 7 days, middle portion, and last 7 days of the hunting seasons. As previously indicated, Carlyle and Rend lakes are close to, and on opposite sides of, the line that separates the Central and Southern zones. The mail questionnaires (Ellis 1982 and Anderson 1983) provided data on hunter activity within zones and movement between zones.

FINDINGS

Waterfowl Populations

Relatively large numbers of ducks move into northern Illinois during the 3rd week in October and remain there for at least 1 month (Table 2). Peak counts recorded on the Mississippi River from East Dubuque to Moline occurred during the week of 13-19 November. Further south, from Moline to Keithsburg (still in the Northern Zone), large numbers of ducks show up the 1st or 2nd week in November and peak counts take place the 3rd or 4th week (Table 2). On the average, there were 15% fewer ducks present on the Mississippi River from Moline to Keithsburg in 1980-1982 than in 1974-1976. Mallard comprises between 29 and 57% of the population on the Mississippi River in October and 66-93% in November and December (Table 3). Scaup and ring-necked duck make up 56% of the population above Moline in October. During the same month, American wigeon, green-winged teal, and pintail are relatively abundant below Moline. In Northeast Illinois, mallard comprises about half the population in October and 71-75% in November and December (Table 3). American wigeon is also common in October.

In the Central Zone, fall build up of ducks on the Illinois and Mississippi rivers occurs during late October and early November (Table 4). Peak counts

ranged from 359,000 to 839,000 on the Illinois River and from 539,000 to 920,000 on the Mississippi River. When comparisons are made among years, populations were on the average 13% less on the Illinois River, and 41% greater on the Mississippi River, in 1980-1982 than in 1974-1976. Mallard comprises 60% of the population on the Illinois River during October and 89-94% during November and December (Table 5). American wigeon, green-winged teal, and pintail are common in October, collectively making up 31% of the population in that month. Mallard is relatively less abundant, and scaup and other diving ducks are relatively more abundant, on the Mississippi River than on the Illinois River during the fall months (Table 5).

Although the data are incomplete, ducks appear to reach peak populations at Carlyle Lake (Central Zone) during mid or late November, and maintain good numbers well into December (Table 6). The maximum counts ranged from 31,000 to 180,000 birds in 1974-1976 and from 36,000 to 51,000 in 1980-1982. An average of 40% fewer birds was present in 1980-1982 than in 1974-1976. The species composition among ducks at Carlyle was similar to the species make-up along the Illinois River (Table 7).

The duck population at Rend Lake, the only area censused in the Southern Zone, was only 47% as great as the population at Carlyle (Table 6). Also, peak numbers apparently occurred relatively late at Rend. The highest single count (108,000 birds) occurred in December 1980. There were, on the average, 45% more ducks present in 1980-1982 than in 1974-1976. Fewer mallard are attracted to Rend Lake than to either Carlyle Lake or the Illinois River Valley (Table 7). American wigeon, green-winged teal, and pintail are important in early fall and make up 41% of the population in October. Wigeon comprise more than 10% of the population in November, as do goldeneye in December. Lesser scaup and ring-necked duck make up 9% of the birds present in November.

Hunter Activity

Hunting pressure in the entire state of Illinois, as determined by DDC harvest surveys, averaged 628,321 days afield in 1975-1976 and 654,214 in 1980-1982. This represents a 4% increase between the two time periods. Hunting pressure increased 33% in the Northern Zone and 2% in the Central Zone, but decreased 27% in the Southern Zone, 1980-1982 versus the earlier years (Table 8). The waterfowl hunting questionnaire indicated that duck hunters spent 621,936 days afield in 1981 and 570,521 days afield in 1982 (Table 9).

There were, on the average, 57,917 days afield recorded on the 16 DDC areas located in the Central and Southern zones in 1980-1982. This is 1.9% greater than the average number of days afield on these areas in 1974-1976 (Table 10). An increase of 3.0% occurred on the areas in the Central Zone, and a decrease of 0.4% was noted for the areas in the Southern Zone. The number of days afield on the DDC areas in the Central Zone increased on 8 areas and decreased on 5 areas (Table 11). Similarly, the number of days afield on the DDC areas in the Southern Zone increased on 1 area and decreased on 2 areas.

The number of hunters at Carlyle Lake, located 25 miles north of the line separating the Central and Southern zones (Fig. 1), was 74% greater on opening day in 1980-1982 than on opening day in 1974-1976 (Table 12). Pressure during the first 7 days--when the season was still closed in the Southern Zone--averaged 342 hunters per day in 1980-1982, or 14% greater than the average for 1974-1976. Hunting pressure during the middle portion of the season--when hunting was also in progress in the Southern Zone--averaged 160 hunters per day in 1980-1982 and was 157 in 1974-1976. When the entire season is considered, hunting pressure at Carlyle was 8% greater in 1980-1982 (182 hunters per day) than during the years without zoning (169 hunters per day).

Rend Lake, located immediately south of the line separating the Central and Southern zones, had a heavy influx of hunters on opening day in 1980-1982 (Table 12). An average of 573 hunters was present, which is 185% greater than the average for opening day in 1974-1976. Hunting pressure during the middle of the season averaged 263 hunters per day in 1980-1982 or 99% greater than during the comparable period in 1974-1976. Pressure during the last 7 days--when hunting had ended in the Central Zone--averaged 255 hunters per day in 1980-1982, which is 118% greater than the pressure the area received toward the end of the season in previous years. For the entire season, hunting pressure at Rend was 93% greater in 1980-1982 than during the earlier years without zoning. It should be noted that Rend Lake has become increasingly popular for Canada goose hunting, and many (if not most) of the hunters there are more interested in geese than ducks.

The only appreciable movement by hunters, as measured via the waterfowl hunting questionnaire, involved residents of the Northern Zone expending 13-14% of their activities in 1981 and 1982 in the Central Zone (Table 13). Most of this movement probably occurred before zoning was implemented because hunters have traditionally traveled from the heavily urbanized areas in northeastern Illinois to hunt ducks in the "Central Zone." As a group, resident hunters expended more than 90% of their duck hunting activities in the same zone in which they resided (Table 13).

Waterfowl Harvest

The FWS surveys indicate that the total harvest of ducks in Illinois averaged 333,064 birds in 1980-1982, when the state was divided into 3 zones. This is 6% greater than the average for 1966-1975 and essentially the same as the average for 1974-1976 (Table 14). Increases >10% were clearly evident

for gadwall, blue-winged teal, northern shoveler, pintail, wood duck, redhead, common goldeneye, bufflehead and ruddy duck. Conversely, harvest of black duck decreased >10%. Key species reflected the following changes, 1980-1982 versus 1974-1976: mallard decreased 9%, black duck decreased 11%, wood duck increased 28%, redhead increased 38%, and canvasback is uncertain but probably decreased. The increase in harvest of redhead was almost certainly caused by the discontinuation of protection of this species on the upper Mississippi River in 1980-1982.

In the Northern Zone, where the season began 8-9 days earlier than usual, the harvest averaged 94,396 ducks in 1980-1982, which is 24,772 birds greater (+36%) than the average for 1974-1976 (Table 15). Most of the increase occurred among mallard (by 11,411 birds), pintail (by 1,597 birds), wood duck (by 4,077 birds), lesser scaup (by 2,679 birds), ring-necked duck (by 1,831 birds), and bufflehead (by 1,264 birds). Among key species, mallard increased by 11,411 birds (+30%), black duck decreased by 344 birds (-18%), wood duck increased by 4,077 birds (+43%), redhead decreased by 67 birds (11%), and canvasback increased by 448 birds (178%).

In the Central Zone, where season dates were similar to those used in past years, the harvest increased from an average of 203,910 ducks in 1974-1976 to 205,852 ducks (+1%) in 1980-1982 (Table 16). Species that registered increases >10% were black duck, gadwall, wigeon, northern shoveler, pintail, redhead, common goldeneye, and bufflehead. For key species, mallard decreased by 13,856 birds (-12%), black duck increased by 702 birds (+19%), wood ducks increased by 10,709 birds (+4.6%), redhead increased by 981 birds (+69%), and canvasback decreased by 908 birds (-40%).

In the Southern Zone, where the season dates were 7 days later than normal, the harvest averaged only 32,816 ducks in 1980-1982, or 27,585 birds

fewer (-46%) than the average in 1974-1976 (Table 17). Decreases $>10\%$ occurred among all species except American wigeon, greater scaup, common goldeneye, and ruddy duck. Among key species, mallard decreased by 11,816 birds (-46%), black duck decreased by 651 birds (-37%), wood duck decreased by 3,505 birds (-35%), redhead decreased by 345 birds (-66%), and canvasback decreased by 180 birds (+24%). Common goldeneye was the only species in which the harvest increased $>10\%$, and hooded merganser was the only species in which the harvest decreased $>10\%$, in all 3 zones in 1980-1983.

The DOC harvest surveys indicate that the statewide harvest averaged 675,401 ducks in 1980-1982, which is 8% less than the average for 1975 and 1976 (Table 8). According to this survey, the harvest increased 18% in the Northern Zone, decreased 5% in the Central Zone, and decreased 53% in the Southern Zone, 1980-1982 versus the earlier years. With 3 zones in effect in 1980-1982, hunting success (number of ducks bagged per day afield) decreased in the Northern Zone by 12%, decreased in the Central Zone by 7%, decreased in the Southern Zone by 33%, and decreased in the entire state by 13% (Table 8). The waterfowl hunting questionnaire indicated a statewide harvest of 397,208 ducks in 1981 and 384,457 ducks in 1982 (Table 9).

On 13 of the more important DOC-controlled areas located in the Central Zone, the annual harvest decreased from an average of 30,172 ducks in 1974-1976 to 29,956 ducks in 1980-1982--a change of only 1% (Table 10). However, the harvest decreased 48% on the 3 areas in the Southern Zone. Seven of the areas in the Central Zone exhibited an increase in harvest and 6 areas recorded a decrease (Table 18). In the Southern Zone, all 3 areas showed a decrease. Among key species, the harvest of mallard decreased 13% in the Central Zone and decreased 55% in the Southern Zone (Table 19). Black duck decreased 13% and 14%, respectively. Wood duck increased 40% in the Central Zone and decreased 39% in the Southern Zone. The number of redhead in the bag

increased more than 2-fold in both zones. Whether the harvest of canvasback increased or decreased on the DDC areas is uncertain because the "average" for 1974-1976 is based on data collected in only 1 year (1976). Hunting success on the DDC areas did not change in the Central Zone, but it decreased 48% in the Southern Zone (Table 10).

According to DDC data, the harvest at Carlyle Lake and Rend Lake--the sister impoundments located on opposite sides of the line separating the Central and Southern zones--averaged 19% greater and 13% less, respectively, in 1980-1982 than in 1974-1976 (Tables 20 and 21). At Mermet Lake--a relatively small, high-quality area located in extreme southern Illinois--the duck harvest in 1980-1982 was only 34% as great as in the earlier years (Table 22).

Oakwood Bottoms, a greentree reservoir located in the Mississippi River floodplain, had a greatly curtailed harvest in 1980-1982 (Table 23). The harvest, 95% of which is composed of mallard and wood duck, decreased from an average of 6,486 ducks in 1974-1976 to 1,123 birds in 1980-1982. Because this downward trend began in 1976, the decrease in harvest was not entirely a consequence of the zoning. However, as this area is prone to freezing (mature timber protects the water from wind action), the late hunting season probably did have a negative effect on the duck harvest in this greentree reservoir.

DISCUSSION

The major points of interest to be discussed are (1) did the experimental zoning in 1980-1982 increase the statewide duck harvest and/or change the species composition of the harvest and (2) did the zoning enhance duck hunting in the Northern and/or Southern zones? With regard to the statewide harvest (all species combined), the FWS surveys indicate no change and the DDC surveys show an 8% decrease, the average for 1980-1982 versus the average for 1974-1976 (Table 24). The 2 sources of data suggest that the total harvest

increased in the Northern Zone (by 18-36%), probably did not change in the Central Zone, and decreased in the Southern Zone (by 46-53%).

The good agreement between the FWS surveys and the DDC surveys (Table 24) reinforce the following conclusions as regards the 3-zone system for duck hunting in Illinois in 1980-1982: (1) the zoning did not significantly increase the total statewide harvest of ducks, (2) it did significantly increase the total harvest in the Northern Zone, and (3) it did significantly decrease the total harvest in the Southern Zone. It should be emphasized that the increase in harvest in the Northern Zone did not come at the expense of the harvest in the Southern Zone. Harvests in southern Illinois were also reduced in 1977-1979, when a Northern Zone did not exist (Anderson 1980).

With regards to key species, the harvest of mallard in 1980-1982 increased significantly in the Northern Zone (by 30%), decreased significantly in the Central Zone (by 12-17%), decreased significantly in the Southern Zone (by 46-55%), and apparently decreased statewide (by 9%) (Table 24). For black duck, decreases of 18% in the Northern Zone, 14-37% in the Southern Zone, and 11% statewide were recorded. Harvest of black duck in the Central Zone increased 19% according to FWS surveys but decreased 32% according to DDC data. For wood duck, significant increases occurred in the Northern Zone (by 43%) and in the Central Zone (by 40-46%), whereas a significant decrease took place in the Southern Zone (by 35-39%). Statewide, the wood duck harvest increased (by 28%). The bulk of the increase in wood duck harvest occurred in the Central Zone and was probably caused by factors largely independent of zoning (e.g., plausibility of mallards) because season dates in the Central Zone were essentially the same in 1980-1982 as in previous years (Table 1).

The indicated changes in harvest of redhead and canvasback have limited application in this evaluation because (1) hunting of redhead was permitted on the upper Mississippi River in 1980-1982 for the first time in several years and (2) the "average" harvest of canvasback during the control years (1974-1976) was based on data collected in only 1 year. The average state-wide harvest of 3,082 redhead and 2,408 canvasback in 1980-1982 does not appear to be excessive.

The zoning in 1980-1982 apparently enhanced duck hunting in the Northern Zone to the extent that the number of days afield increased 33% and the total harvest of ducks increased 18-36% (Tables 8 and 24). However, hunting success decreased 12% (Table 8).

For the Southern Zone, both the quantity and quality of duck hunting appreciably decreased in 1980-1982: the number of days afield decreased 1-27%, the total harvest decreased 46-53%, and hunting success decreased 36-48% (Tables 8, 10, and 24). These findings are similar to those detected for 1977-1979, when a 2-zone system was in effect (Anderson 1980). From the standpoint of providing recreation, zoning does not appear to be viable for managing duck hunting in southern Illinois. Paradoxically, many hunters in that portion of the state favor zoning and the late hunting it provides.

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Table 1. Dates and lengths of the duck hunting season (Illinois, 1974-1976 and 1980-1982). The point system for determining the daily bag limit was in effect in all years.

Year	Start	End	Days	Mallards Allowed
1974 (entire state)	Wed., Oct. 23	Dec. 11	50	3 ^a
1975 (entire state)	Wed., Oct. 22	Dec. 10	50	3
1976 (entire state)	Sat., Oct. 23	Dec. 11	50	4
1980 Northern Zone	Tues., Oct. 14	Dec. 2	50	4
Central Zone	Thurs., Oct. 23	Dec. 11	50	4
Southern Zone	Thurs., Oct. 30	Dec. 18	50	4
1981 Northern Zone	Wed., Oct. 14	Dec. 2	50	4
Central Zone	Thurs., Oct. 22	Dec. 10	50	4
Southern Zone	Thurs., Oct. 29	Dec. 17	50	4
1982 Northern Zone	Wed., Oct. 13	Dec. 1	50	4
Central Zone	Thurs., Oct. 21	Dec. 9	50	4
Southern Zone	Thurs., Oct. 28	Dec. 16	50	4

^aMaximum number of mallards permitted in the daily bag.

Table 2. Numbers of ducks, in thousands, counted during aerial inventories in northeast Illinois and along the Mississippi River in the Northern Zone (Illinois, 1974-1976 and 1980-1982). Data from the Illinois Natural History Survey.

Year	October					November				December		
	2-8	9-15	16-22	23-29	30-5	6-12	13-19	20-26	27-3	4-10	11-17	18-24
NORTHEAST ILLINOIS (Lake and McHenry counties)												
1974	<u>a</u>											
1975	<u>a</u>											
1976	2		9		7	6		2				
1980	6		2		3							
1981	4		13		7		5		5	3		
1982					8		6				3	
MISSISSIPPI RIVER (East Dubuque to Moline)												
1974	<u>a</u>											
1975	<u>a</u>											
1976	<u>a</u>											
1980			92		112		119		20			7
1981												4
1982							74					9
MISSISSIPPI RIVER (Moline to Keithsburg)												
1974	2	1	6	4	37	60	64	42	31	10		
1975	1	4	4	7	43	82	46	102	52	56	83	
1976	2	2	6	19	23	68	70	74	11	2	1	
1980	5	8	15	32	28	26	38	33		60		
1981	5	4	5	35		25	86	113	101	101	124	
1982	1	2	4	7		31	96			29	12	

^aInventories were not conducted in these years.

Table 3. Mean species composition, expressed in percentages, of ducks counted during aerial inventories representing the months of October, November, and December, in northeast Illinois and along the Mississippi River in the Northern Zone (Illinois, 1975-1982). Data from the Illinois Natural History Survey.

Species	Northeast Illinois ^a			Mississippi River ^b			Mississippi River ^c		
	Oct.	Nov.	Dec.	Oct.	Nov.	Dec.	Oct.	Nov.	Dec.
Dabbling ducks									
Mallard	54.2	75.4	71.0	28.7	66.9	66.3	57.4	90.1	92.9
Black duck	2.3	4.8	6.8	0.3	1.8	4.5	1.2	1.6	1.9
Gadwall	2.0	0.7	0.0	1.5	0.3	0.0	1.1	0.3	0.0
American wigeon	30.1	5.2	0.0	6.6	1.8	0.0	16.8	3.4	0.4
Green-winged teal	2.7	0.9	0.0	1.1	0.0	0.0	7.9	0.3	0.0
Blue-winged teal	0.4	0.0	0.0	0.0	0.0	0.0	1.8	<0.1	0.0
Northern shoveler	0.1	0.0	0.0	0.1	0.0	0.0	0.4	<0.1	0.0
Pintail	1.5	0.1	0.0	0.3	0.5	0.0	8.7	1.6	<0.1
Total	93.3	87.1	77.8	38.6	71.3	72.8	95.3	97.3	95.2
Diving ducks									
Redhead	0.0	0.0	0.0	1.6	0.0	0.0	0.0	0.1	0.2
Canvasback	0.1	0.3	0.0	3.9	3.2	0.4	0.6	0.4	0.5
Scaup	4.7	4.1	0.0	35.6	14.8	0.0	3.3	1.4	0.8
Ring-necked duck	1.8	1.7	0.0	19.9	8.8	0.1	0.6	0.4	0.2
Common goldeneye	0.0	6.8	21.5	0.0	1.5	26.7	0.0	0.3	3.0
Bufflehead	0.0	0.0	0.2	0.2	0.1	0.0	0.1	0.1	0.1
Ruddy duck	0.1	0.0	0.5	0.2	0.3	0.0	0.1	<0.1	<0.1
Total	6.7	12.9	22.2	61.4	28.7	27.2	4.7	2.7	4.8

^aLake and McHenry counties, data for 1976 through 1982.

^bEast Dubuque to Moline, data for 1980-1982 only.

^cMoline to Keithsburg.

Table 4. Numbers of ducks, in thousands, counted during aerial inventories along the Illinois and Mississippi rivers in the Central Zone (Illinois, 1974-1976 and 1980-1982). Data from the Illinois Natural History Survey.

Year	October					November				December		
	2-8	9-15	16-22	23-29	30-5	6-12	13-19	20-26	27-3	4-10	11-17	18-24
ILLINOIS RIVER (Spring Valley to Meredosia)												
1974	58	124	130	148	436	284	450	291	267	355		
1975	68	89	150	101	430	783	839	796	534	772	586	
1976	74	93	134	315	463	723	378	472	372	241	213	
1980	105	132	414	544	510	466	317	351	238	340		
1981	54	60	97	458	422	434	454	406	547	450	402	
1982	27	38	49	142	338	359	294			358	294	
MISSISSIPPI RIVER (Keithsburg to Grafton)												
1974	17	37	61	122	539	405	431	245	238	268		
1975	59	108	69	139	153	635	769	607	616	619	585	
1976	23	60	62	242	381	572	405	490	247	173	169	
1980	58	98	393	526	920	804	611	424		185		
1981	46	49	152	812		492	437	487	445	347	255	
1982	14	26	51	140		482	422			349	293	

Table 5. Mean species composition, expressed in percentages, of ducks counted during aerial inventories representing the months of October, November, and December, along the Illinois and Mississippi rivers in the Central Zone (Illinois, 1974-1982). Data from the Illinois Natural History Survey.

Species	Illinois River ^a			Mississippi River ^b		
	Oct.	Nov.	Dec.	Oct.	Nov.	Dec.
Dabbling ducks						
Mallard	60.0	88.8	94.4	32.6	46.2	72.6
Black duck	1.1	1.9	2.1	0.6	0.9	1.3
Gadwall	1.1	0.4	<0.1	1.2	0.3	<0.1
American wigeon	15.4	4.0	0.7	11.6	3.1	0.8
Green-winged teal	7.8	0.7	0.1	5.0	0.3	0.1
Blue-winged teal	2.4	0.1	0.0	1.3	0.1	0.0
Northern shoveler	0.5	<0.1	0.0	0.4	<0.1	0.0
Pintail	8.1	1.5	0.1	26.2	6.1	1.1
Total	96.4	97.4	97.4	78.9	57.0	75.9
Diving ducks						
Redhead	<0.1	<0.1	<0.1	0.4	1.0	0.5
Canvasback	0.4	0.3	0.1	2.1	13.4	11.6
Scaup	2.3	1.3	0.4	15.1	25.0	7.0
Ring-necked duck	0.7	0.5	0.1	2.3	2.6	1.2
Common goldeneye	0.0	0.3	1.9	0.0	0.5	3.3
Bufflehead	<0.1	0.1	0.1	0.2	0.3	0.4
Ruddy duck	0.2	0.1	<0.1	1.0	0.2	0.1
Total	3.6	2.6	2.6	21.0	43.0	24.1

^aSpring Valley to Meredosia.

^bKeithsburg to Grafton.

Table 6. Numbers of waterfowl, in thousands, counted during aerial inventories at Carlyle Lake in the Central Zone and at Rend Lake in the Southern Zone (Illinois, 1974-1976 and 1980-1982). Data from the Illinois Natural History Survey.

Year	October					November				December		
	2-8	9-15	16-22	23-29	30-5	6-12	13-19	20-26	27-3	4-10	11-17	18-24
CARLYLE LAKE												
1974										31	19	
1975			1		7		180		148			
1976				18		28	108	38			36	
1980		6		43		39		42		26		42
1981				24		33			35		51	
1982		2		13		36				21	26	21
REND LAKE												
1974										2	9	
1975			1		3		7		71			
1976				5		7	25	15			21	
1980		5		8		24		12		58		108
1981				29		15			15		26	
1982		3		7		16				9	11	8

Table 7. Mean species composition, expressed in percentages, of ducks counted during aerial inventories conducted in October, November, and December, at Carlyle Lake in the Central Zone and at Rend Lake in the Southern Zone (Illinois, 1974 through 1982). Data from the Illinois Natural History Survey.

Species	Carlyle Lake			Rend Lake		
	Oct.	Nov.	Dec.	Oct.	Nov.	Dec.
Dabbling ducks						
Mallard	59.2	79.9	90.3	45.7	67.4	82.5
Black duck	0.8	1.6	2.1	0.7	1.3	1.9
Gadwall	1.5	0.8	0.1	2.8	1.4	0.2
American wigeon	15.2	6.8	1.5	19.4	11.2	2.4
Green-winged teal	7.6	1.2	0.1	10.8	2.9	0.2
Blue-winged teal	3.2	0.3	0.0	4.2	0.3	0.0
Northern shoveler	0.5	0.1	0.0	1.0	0.2	0.0
Pintail	7.5	2.1	0.4	10.6	4.2	1.2
Total	95.5	92.8	94.5	95.2	88.9	88.4
Diving ducks						
Redhead	<0.1	0.1	<0.1	0.2	0.1	0.1
Canvasback	0.4	0.4	0.3	1.3	1.0	1.3
Scaup	3.0	3.4	0.3	1.8	4.5	0.6
Ring-necked duck	1.0	2.6	0.1	1.4	4.2	0.4
Common goldeneye	0.0	0.6	4.6	0.0	1.0	8.8
Bufflehead	<0.1	<0.1	0.1	0.0	0.1	0.2
Ruddy duck	0.1	0.1	0.1	0.1	0.2	0.2
Total	4.5	7.2	5.5	4.8	11.1	11.6

Table 8. Number of days afield, number of ducks harvested, and ducks per day afield as determined by DDC mail-card surveys conducted by Jack A. Ellis (Illinois, 1975-1976 and 1980-1982). Data in this table are indices only and should not be construed as actual numbers of ducks harvested.

Criteria	Zoning Not in Effect			With Three Zones			
	1975	1976	Mean	1980	1981	1982	Mean
Hunter-trips							
Northern Zone	128,654	122,219	125,437	146,512	146,071	206,606	166,396
Central Zone	421,495	429,898	425,697	341,358	477,022	476,889	431,756
Southern Zone	60,496	93,879	77,188	71,930	49,324	46,929	56,061
Entire State	610,645	645,996	628,321	559,800	672,417	730,424	654,213
Ducks Harvested							
Northern Zone	92,011	125,452	108,732	120,631	111,147	151,693	127,824
Central Zone	533,735	506,473	520,104	381,844	544,329	561,010	495,728
Southern Zone	74,839	143,560	109,200	68,277	52,219	35,051	51,849
Entire State	700,585	775,485	738,035	570,752	707,695	747,754	675,401
Ducks per Hunter-trip							
Northern Zone	0.72	1.03	0.88	0.82	0.76	0.73	0.77
Central Zone	1.27	1.18	1.23	1.12	1.14	1.18	1.15
Southern Zone	1.24	1.53	1.39	0.95	1.06	0.75	0.92
Entire State	1.15	1.20	1.18	1.02	1.05	1.02	1.03

Table 9. Hunter activity and duck harvest by zone during the regular duck season (Illinois, 1981 and 1982). Data obtained by mail-letter waterfowl hunting questionnaire (Anderson 1983 and unpublished data).

Zone	Number of Hunters	Days		Ducks		
		Number	Per Hunter	Number	Per Hunter per Day	Per Hunter per Season
<hr/>						
<div>1981</div> <hr/>						
Northern	13,385 ^a	135,844	10.1	72,162	0.57	5.39
Central	30,965 ^a	400,540	12.9	285,425	0.67	9.22
Southern	10,788 ^a	85,552	7.9	39,621	0.55	3.67
Entire State	48,395 ^b	621,936	12.9	397,208	0.64	8.21
<hr/>						
<div>1982</div> <hr/>						
Northern	15,505 ^a	175,187	11.3	79,362	0.46	5.13
Central	27,587 ^a	326,412	11.8	269,291	0.83	9.73
Southern	8,910 ^a	69,823	7.8	35,304	0.49	3.83
Entire State	46,163 ^b	571,422	12.4	384,457	0.67	8.33

^aIncludes repeats of individual hunters because some hunters were active in more than 1 zone.

^bApproximately 6.0% were non-residents.

Table 10. Number of days afield, number of ducks harvested, and ducks per day afield on 13 public waterfowl hunting areas in the Central Zone and on 3 public areas in the Southern Zone (Illinois, 1974-1976 and 1980-1982). Data from DDC bag checks. No data was available for public areas in the Northern Zone.

Parameter and Zone	Zoning Not in Effect				With Three Zones			
	1974	1975	1976	Mean	1980	1981	1982	Mean
Days Afield								
Central Zone (13 areas)	34,808	43,869	35,053	37,911	37,652	41,107	38,403	39,054
Southern Zone (3 areas)	18,781	20,506	17,535	18,941	18,451	19,854	18,283	18,863
Ducks Harvested								
Central Zone	20,948	41,028	28,539	30,172	28,529	33,733	29,956	30,739
Southern Zone	16,075	18,035	13,095	15,735	7,533	8,545	8,186	8,088
Ducks Per Day Afield								
Central Zone	.60	.94	.81	.80	.76	.82	.78	.79
Southern Zone	.77	.88	.75	.83	.41	.43	.45	.43

Table 11. Number of days afield on 13 public waterfowl hunting areas in the Central Zone and on 3 public areas in the Southern Zone (Illinois, 1974-1976 and 1980-1982). No data was available for public areas in the Northern Zone.

Area	Zoning Not in Effect				With Three Zones			
	1974	1975	1976	Mean	1980	1981	1982	Mean
CENTRAL ZONE								
(1) Carlyle Lake	7,076	10,308	7,511	8,298	8,318	10,018	8,934	9,090
(2) Stump Lake	3,715	3,757	4,261	3,911	2,374	3,241	2,562	2,892
(3) Batchtown	5,682	8,277	5,346	6,435	6,862	7,252	2,974	5,696
(4) Godar/Diamond	3,434	3,402	2,750	3,195	3,277	3,439	3,311	3,342
(5) Calhoun Point	1,620	1,608	1,865	1,698	1,487	1,978	1,837	1,767
(6) Sanganois	1,814	2,310	2,067	2,064	2,469	3,226	3,485	3,060
(7) Glades	1,965	2,393	1,636	1,998	2,608	2,457	2,109	2,391
(8) Sangchris Lake	2,115	2,926	2,707	2,583	1,674	1,299	1,545	1,506
(9) Marshall Co.	2,332	2,410	1,518	2,087	2,077	1,643	2,166	1,962
(10) Woodford Co.	1,789	1,787	1,571	1,716	2,431	2,371	2,623	2,475
(11) Rice Lake	967	1,962	1,839	1,589	1,090	1,152	1,210	1,151
(12) Spring Lake	1,428	1,760	1,153	1,447	1,108	1,880	2,238	1,742
(13) Anderson Lake	871	969	829	890	1,413	1,150	1,425	1,329
Totals	34,808	43,869	35,053	37,911	37,688	41,106	36,419	38,403
SOUTHERN ZONE								
(14) Rend Lake	8,485	6,428	6,555	7,156	13,400	13,767	11,969	13,045
(15) Oakwood Bottoms	8,003	11,463	8,412	9,293	2,973	4,417	3,093	3,494
(16) Mermet	2,293	2,615	2,568	2,492	2,078	1,670	1,485	1,744
Totals	18,781	20,506	17,535	18,941	18,451	19,854	16,547	18,283

Table 12. Mean number of hunters per day at Carlyle Lake and Rend Lake during the duck season (Illinois, 1974-1976 and 1980-1982).

Area and Days	Zoning Not in Effect				With Three Zones			
	1974	1975	1976	Mean	1980	1981	1982	Mean
Carlyle Lake (Central Zone)								
Opening Day	486 ^a	365 ^a	690 ^b	514	636 ^a	1,245 ^a	815 ^a	895
First 7 Days	326	330	275	310	275	435	315	342
Middle 36 Days	121 ^c	195 ^c	154	157	153	165	162	160
Last 7 Days	80	189	4 ^d	91	128	151	131	137
Entire Season	144	213	150	169	166	200	179	182
Rend Lake (Southern Zone)								
Opening Day	180 ^a	166 ^a	257 ^b	201	627 ^a	530 ^a	563	573
First 7 Days	164	153	161	159	317	244	285	282
Middle 36 Days	153	108	136	132	262	292	235	263
Last 7 Days	148	129	74	117	250	299	215	255
Entire Season	154	121	131	135	268	275	239	261

^aMidweek opening.

^bSaturday opening.

^c35 days.

^dLake frozen last part of season.

Table 13. Movement of resident duck hunters and their hunting effort between zones (Illinois, 1981 and 1982). Data obtained by mail-letter waterfowl hunting questionnaire (Anderson 1983 and unpublished data).

Criteria	Location of Activity					
	Northern Zone		Central Zone		Southern Zone	
	1981	1982	1981	1982	1981	1982
<u>Hunters Residing in Northern Zone</u>						
Hunters: Number	12,336	13,642	3,246	2,819	999	856
Percent	74.4	78.8	19.6	16.3	6.0	4.9
Days: Number	128,856	158,474	21,774	23,207	5,641	2,467
Percent	82.5	86.1	13.9	12.6	3.6	1.3
<u>Hunters Residing in Central Zone</u>						
Hunters: Number	699	1,259	24,921	22,503	3,546	2,869
Percent	2.4	4.7	84.4	84.5	12.2	10.8
Days: Number	4,690	7,048	349,561	281,357	14,433	11,327
Percent	1.3	2.3	94.8	93.9	3.9	3.8
<u>Hunters Residing in Southern Zone</u>						
Hunters: Number	50	0	899	705	5,544	4,229
Percent	0.8	0.0	13.8	14.3	85.4	85.7
Days: Number	150	0	4,894	5,991	61,029	50,089
Percent	0.2	0.0	7.4	10.7	92.4	89.3

Table 14. Harvest of ducks by species in the entire state (Illinois, 1966-1975, 1974-1976, and 1980-1982). Data from the U.S. Fish & Wildlife Service. Data for 1982 are preliminary.

Species	Zoning Not in Effect		With Three Zones				Percent Change ^a
	Mean for 1966-1975	Mean for 1974-1976	1980	1981	1982	Mean	
Dabbling Ducks							
Mallard	179,078	180,230	170,466	179,354	139,626	163,149	-9/-9
Black duck	7,898	7,197	6,772	7,872	4,546	6,397	-19/-11
Gadwall	8,862	11,339	7,734	13,301	18,174	13,070	+47/+15
American wigeon	13,363	10,817	14,644	18,265	9,604	14,171	+6/+31
Green-winged teal	19,692	23,006	19,692	23,440	15,759	19,630	0/-15
Blue-winged teal	6,115	6,648	3,961	7,359	10,525	7,282	+19/+10
Northern shoveler	2,940	2,452	2,819	4,149	2,777	3,248	+10/+32
Pintail	7,175	4,780	5,878	13,728	6,681	8,762	+22/+83
Wood duck	38,024	42,193	54,037	59,488	48,565	54,030	+42/+28
TOTAL	283,147	288,662	286,003	326,956	256,257	289,739	+2/0
Diving Ducks							
Redhead	2,317	2,232	3,128	4,382	1,737	3,082	+33/+38
Canvasback	1,934	4,254 ^b	4,537	853	1,893	2,428	+26/-43
Greater scaup	1,021	663	550	776	1,186	837	-18/+26
Lesser scaup	11,564	19,042	10,759	21,135	21,955	17,950	+55/-6
Ring-necked duck	8,448	14,177	11,619	12,603	10,965	11,729	+39/-17
Common goldeneye	1,180	922	756	2,366	2,409	1,844	+56/+100
Bufflehead	1,493	1,494	3,403	2,172	2,004	2,526	+69/+69
Ruddy duck	543	568	378	931	1,657	989	+82/+74
TOTAL	28,500	40,632	35,130	45,218	43,806	41,385	+45/+2
Hooded Merganser	1,279	1,626	2,372	1,008	586	1,322	+3/-19
Other ducks	1,049	954	344	1,512	0	618	-41/-35
ALL SPECIES	313,975	331,874	323,849	374,694	300,649	333,064	+6/0

^aRelative to mean for 1966-1975/mean for 1974-1976.

^b1976 only. Canvasbacks were protected statewide in 1974 and 1975.

Table 15. Harvest of ducks by species in the Northern Zone (Illinois, 1974-1976 and 1980-1982 Data from the U.S. Fish & Wildlife Service. Data for 1982 are preliminary.

Species	Zoning Not in Effect				With Three Zones				Percent Change ^d
	1974	1975	1976	Mean	1980	1981	1982	Mean	
Dabbling Ducks									
Mallard	43,842	32,247	38,260	38,116	47,872	55,980	44,729	49,527	+30
Black duck	2,286	720	2,772	1,926	1,569	2,236	941	1,582	-18
Gadwall	1,039	1,258	2,016	1,438	2,701	1,601	762	1,688	+17
American wigeon	2,286	1,441	1,260	1,662	2,469	957	1,130	1,519	-9
Green-winged teal	6,231	3,419	3,528	4,393	7,639	2,236	6,043	5,306	+21
Blue-winged teal	2,077	3,058	1,260	2,132	900	1,279	6,043	2,741	+29
Northern shoveler	829	360	0	396	223	322	0	182	-54
Pintail	620	897	0	506	2,701	1,914	1,694	2,103	+316
Wood duck	10,385	9,725	8,561	9,557	15,732	13,093	12,076	13,634	+43
TOTAL	69,595	53,125	57,657	60,126	81,806	74,618	73,418	78,281	+30
Diving Ducks									
Redhead	419	897	504	607 ^b	678	0	941	540	-11
Canvasback	0	183	252	252 ^b	900	635	565	700	+178
Greater scaup	419	360	0	260	0	1,279	762	630	+162
Lesser scaup	4,573	2,161	8,813	5,182	3,824	11,834	7,925	7,861	+52
Ring-necked duck	2,077	2,698	756	1,844	1,569	5,116	4,339	3,675	+99
Common goldeneye	0	0	252	84	0	957	762	573	+582
Bufflehead	419	360	252	344	3,592	957	0	1,516	+341
Ruddy duck	0	360	252	204	223	0	565	263	+29
TOTAL	7,917	7,019	11,081	8,777	10,786	20,778	15,859	15,808	+80
Hooded merganser	0	720	252	324	223	0	377	200	-38
Other ducks	0	183	1,008	397	0	322	0	107	-73
ALL SPECIES	77,502	61,047	69,998	69,624	92,815	100,718	89,654	94,396	+36

^aRelative to mean for 1974-1976.

^b1976 only. Canvasbacks were protected statewide in 1974 and 1975.

Table 16. Harvest of ducks by species in the Central Zone (Illinois, 1974-1976 and 1980-1982). Data from the U.S. Fish & Wildlife Service. Data for 1982 are preliminary.

Species	Zoning Not in Effect				With Three Zones				Percent Change ^a
	1974	1975	1976	Mean	1980	1981	1982	Mean	
Dabbling Ducks									
Mallard	112,005	114,038	92,399	116,147	113,056	115,699	78,117	102,291	-12
Black duck	2,910	4,142	4,285	3,779	4,052	5,428	3,964	4,481	+19
Gadwall	3,734	10,640	2,519	5,631	4,052	8,318	13,773	8,714	+55
American wigeon	6,644	8,285	5,545	6,825	7,640	11,514	4,905	8,020	+13
Green-winged teal	12,264	21,064	10,583	14,637	13,043	15,672	10,009	12,902	-12
Blue-winged teal	2,270	7,743	753	3,589	2,238	5,757	2,461	3,485	-3
Northern shoveler	421	2,518	2,765	1,901	2,016	3,525	2,262	2,601	+37
Pintail	2,087	4,684	2,273	3,015	2,903	10,221	6,045	6,390	+112
Wood duck	24,106	34,953	10,321	23,127	34,392	34,846	32,271	33,836	+46
TOTAL	166,441	238,067	131,443	178,651	183,392	210,980	153,807	182,726	+2
Diving Ducks									
Redhead	421	1,814	2,013	1,416 ^b	2,238	3,830	1,122	2,397	+69
Canvasback	201	0	2,273	2,273 ^b	2,701	634	760	1,365	-40
Greater scaup	201	731	246	393	0	329	760	563	-43
Lesser scaup	8,932	13,510	11,074	11,172	2,480	7,355	13,972	7,936	-29
Ring-necked duck	4,777	11,886	5,038	7,234	7,197	7,634	6,425	7,102	-2
Common goldeneye	622	1,273	753	883	907	1,269	1,122	1,099	+24
Bufflehead	201	1,273	507	660	665	963	2,461	1,363	+107
Ruddy duck	201	731	246	393	222	329	561	371	-6
TOTAL	15,556	31,218	22,150	22,424	16,410	22,393	27,183	21,996	-2
Hooded merganser	622	731	0	451	1,572	634	0	735	-63
Other ducks	421	731	0	384	222	963	0	395	+3
ALL SPECIES	183,040	270,747	153,593	203,910	201,596	234,970	180,990	205,852	+1

^aRelative to mean for 1974-1976.

^b1976 only. Canvasbacks were protected statewide in 1974 and 1975.

Table 17. Harvest of ducks by species in the Southern Zone (Illinois, 1974-1976 and 1980-1982). Data from the U.S. Fish & Wildlife Service. Data for 1982 are preliminary.
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Species	Zoning Not in Effect				With Three Zones				Percent Change ^a
	1974	1975	1976	Mean	1980	1981	1982	Mean	
Dabbling Ducks									
Mallard	17,030	26,823	33,243	25,699	12,930	14,330	14,341	13,883	-46
Black duck	1,661	1,622	2,016	1,766	1,125	1,279	942	1,115	-37
Gadwall	208	4,147	8,812	4,389	1,125	2,879	2,454	2,153	-51
American wigeon	416	2,524	3,523	2,154	1,799	2,879	1,509	2,062	-4
Green-winged teal	1,453	3,965	5,039	3,486	898	1,599	378	958	-73
Blue-winged teal	624	1,084	1,258	989	674	0	0	225	-77
Northern shoveler	208	0	1,258	489	450	320	378	383	-22
Pintail	624	1,804	758	1,062	450	640	189	426	-60
Wood duck	5,816	11,532	12,845	10,064	3,594	10,231	5,851	6,559	-35
TOTAL	28,040	53,501	68,752	50,098	23,045	34,207	26,042	27,764	-45
Diving Ducks									
Redhead	208	363	1,008	526	224	320	0	181	-66
Canvasback	0	0	758	758 ^b	1,225	320	189	578	-24
Greater scaup	208	0	0	69	224	0	0	75	+9
Lesser scaup	832	2,161	4,031	2,341	2,473	1,919	1,320	1,904	-19
Ring-necked duck	1,661	4,147	8,312	4,706	1,799	640	1,320	1,253	-73
Common goldeneye	0	0	250	83	0	320	378	233	+131
Bufflehead	208	182	758	382	0	640	189	276	-28
Ruddy duck	0	0	0	0	0	320	567	296	+
TOTAL	3,117	6,853	15,117	8,865	5,945	4,479	3,963	4,796	-46
Hooded merganser	1,869	0	1,507	1,125	224	0	0	75	-93
Other ducks	0	182	758	313	224	320	0	181	-42
ALL SPECIES	33,026	60,536	86,134	60,401	29,438	39,006	30,005	32,816	-46

^aRelative to mean for 1974-1976.

^b1976 only. Canvasbacks were protected statewide in 1974 and 1975.

Table 18. Number of ducks harvested on 13 public waterfowl hunting areas in the Central Zone and on 3 public areas in the Southern Zone (Illinois, 1974-1976 and 1980-1982). No data was available for areas in the Northern Zone.

Area	Zoning Not in Effect				With Three Zones			
	1974	1975	1976	Mean	1980	1981	1982	Mean
CENTRAL ZONE								
(1) Carlyle Lake	4,418	11,223	5,781	7,141	5,582	11,474	8,492	8,516
(2) Stump Lake	1,871	3,867	4,442	3,393	2,724	2,222	1,794	2,246
(3) Batchtown	4,012	9,699	4,575	6,095	5,278	4,604	1,871	3,917
(4) Godar/Diamond	2,862	3,466	2,571	2,966	2,413	2,555	2,418	2,462
(5) Calhoun Point	721	818	1,089	876	612	1,235	1,155	1,001
(6) Sanganois	1,270	2,520	2,775	2,188	2,639	3,630	3,658	3,309
(7) Glades	1,076	1,403	993	1,157	1,600	1,182	1,089	1,290
(8) Sangchris Lake	1,431	1,838	1,566	1,612	897	719	789	802
(9) Marshall Co.	1,007	1,756	822	1,195	1,078	958	1,251	1,096
(10) Woodford Co.	894	1,481	1,148	1,174	1,738	2,038	2,494	2,090
(11) Rice Lake	318	1,394	1,664	1,125	814	837	1,399	1,017
(12) Spring Lake	638	863	547	683	634	1,383	1,380	1,132
(13) Anderson Lake	430	700	566	565	1,112	896	1,225	1,078
Totals	20,948	41,028	28,539	30,170	27,121	33,733	29,015	29,956
SOUTHERN ZONE								
(14) Rend Lake	7,331	6,878	7,414	7,208	5,651	6,283	6,845	6,260
(15) Oakwood Bottoms	7,350	8,436	3,662	6,483	815	1,458	1,095	1,123
(16) Mermet	1,394	2,721	2,019	2,045	1,067	804	538	803
Totals	16,075	18,035	13,095	15,536	7,533	8,545	8,478	8,186

Table 19. Mean annual harvest of ducks by species on 13 public areas in the Central Zone and on 3 public areas in the Southern Zone (Illinois, 1974-1976 and 1980-1982). The individual areas are listed in Table 18. The values for total ducks harvested in this table may differ slightly from the values listed in Table 18 because harvest data was not available by species for all areas in all years. No data was available for areas in the Northern Zone.

Species	Central Zone					Southern Zone				
	1974-1976	1980	1981	1982	Mean	1974-1976	1980	1981	1982	Mean
Dabbling Ducks										
Mallard	19,025	15,382	17,004	15,165	15,849	11,060	4,753	5,455	4,726	4,978
Black duck	342	277	431	188	299	230	165	197	233	198
Gadwall	823	748	1,342	1,287	1,126	371	312	378	348	346
American wigeon	830	814	1,722	1,054	1,197	179	140	211	291	214
Green-winged teal	2,068	1,991	2,463	1,460	1,973	752	470	197	271	313
Blue-winged teal	583	330	1,074	747	717	133	47	69	181	99
Northern shoveler	255	167	177	243	196	33	95	37	88	73
Pintail	987	683	1,178	618	826	92	110	98	220	143
Wood duck	3,312	4,789	4,919	4,172	4,627	2,261	960	1,503	1,685	1,382
TOTAL	28,125	25,181	30,315	24,934	26,810	15,111	7,074	8,183	8,078	7,778
Dividing Ducks										
Redhead	124	336	264	269	290	4	45	47	31	41
Canvasback	177 ^a	245	128	114	162	53	39	17	33	30
Scaup	1,323	1,244	1,744	1,655	1,548	163	96	115	122	111
Ringneck	563	954	752	646	784	329	206	115	119	147
Common goldeneye	86	66	97	90	84	30	5	4	1	3
Bufflehead	112	154	151	153	153	7	61	20	35	39
Ruddy duck	58	121	79	77	92	4	0	21	45	22
TOTAL	2,443	3,120	3,215	3,004	3,113	590	452	339	386	392
Hooded merganser	60	147	86	96	110	54	7	9	14	10
Other Ducks	81	81	117	90	96	336	0	14	0	5
All Species	30,709	28,529	33,733	28,124	30,129	16,091	7,533	8,545	8,478	8,185

^a1976 only.

Table 20. Harvest of ducks by species at Carlyle Lake in the Central Zone (Illinois, 1974-1976 and 1980-1982). Data from bag checks conducted during the hunting seasons.

Species	Zoning Not in Effect				With Three Zones			
	1974	1975	1976	Mean	1980	1981	1982	Mean
Dabbling Ducks								
Mallard	2,596	6,693	3,511	4,267	2,701	5,532	5,358	4,530
Black duck	102	121	78	100	54	235	43	111
Gadwall	65	504	190	253	76	588	282	315
American wigeon	77	382	143	201	259	824	290	458
Green-winged teal	273	1,203	922	799	684	1,648	707	1,013
Blue-winged teal	45	419	56	173	149	824	418 ^b	464
Northern shoveler	28	40	17	28	28	20 ^a	40 ^b	29
Pintail	73	223	91	129	111	470	213	265
Wood duck	1,021	1,257	727	1,002	1,237	1,059	537	944
TOTAL	4,280	10,842	5,735	6,952	5,299	11,200	7,888	8,129
Diving Ducks								
Redhead	0	37	4	14	51	47	60	53
Canvasback	0	3	4	2	32	12	9 ^b	18
Scaup	81	152	17	83	89	105 ^a	240 ^b	145
Ring-necked duck	37	176	21	78	73	105 ^a	240 ^b	139
Common goldeneye	0	0	0	0	0	0	10 ^b	3
Bufflehead	0	3	0	1	3	0	10 ^b	4
Ruddy duck	0	0	0	0	13	0	10 ^b	8
TOTAL	118	371	46	178	261	269	579	370
Hooded merganser	20	3	0	8	22	0	10 ^b	11
Other ducks	0	7	0	2	0	5 ^a	15 ^b	6
All Species	4,418	11,223	5,781	7,140	5,582	11,474	8,492	8,516

^aEstimated; 235 ducks were identified only as "other" in 1981.

^bEstimated; 575 ducks were identified only as "other" in 1982.

Table 21. Harvest of ducks by species at Rend Lake in the Southern Zone (Illinois, 1974-1976 and 1980-1982). Data from bag checks conducted during the hunting season.

Species	Zoning Not in Effect				With Three Zones			
	1974	1975	1976	Mean	1980	1981	1982	Mean
Dabbling Ducks								
Mallard	5,941	4,576	4,618	5,045	3,727	4,415	4,390	4,177
Black duck	199	166	174	179	127	180	222	176
Gadwall	97	592	274	321	291	366	336	331
American wigeon	70	296	80	148	134	205	283	207
Green-winged teal	103	592	1,112	602	414	146	247	269
Blue-winged teal	76	58	108	81	47	66	174	96
Northern shoveler	21	21	33	25	95	34	74	68
Pintail	59	36	93	63	83	80	216	126
Wood duck	549	390	455	465	388	476	537	467
TOTAL	7,115	6,727	6,947	6,929	5,306	5,968	6,478	5,917
Diving Ducks								
Redhead	0	7	0	2	44	47	31	41
Canvasback	5	0	53	19	39	17	32	29
Scaup	119	58	274	151	94	112	117	108
Ring-necked duck	65	14	20	33	114	80	108	101
Common goldeneye	11	0	73	28	0	4	0	1
Bufflehead	5	14	0	6	54	20	34	36
Ruddy duck	0	0	0	0	0	21	45	22
TOTAL	205	93	420	239	345	301	367	338
Hooded merganser	11	58	47	39	0	0	0	0
Other ducks	0	0	0	0	0	14	0	5
All Species	7,331	6,878	7,414	7,207	5,651	6,283	6,847	6,260

Table 22. Harvest of ducks by species at Mermet Lake in the Southern Zone (Illinois, 1975-1976 and 1980-1982). Data from bag checks conducted during the hunting seasons.

Species	Zoning Not in Effect			With Three Zones			
	1975	1976	Mean	1980	1981	1982	Mean
Dabbling Ducks							
Mallard	1,113	1,300	1,207	633	354	174	387
Black duck	46	55	51	38	17	11	22
Gadwall	68	32	50	21	12	13	15
American wigeon	33	28	31	6	6	8	7
Green-winged teal	220	79	150	56	51	24	44
Blue-winged teal	87	16	52	0	3	7	3
Northern shoveler	14	2	8	0	3	14	6
Pintail	22	36	29	27	18	4	16
Wood duck	580	291	436	172	293	250	238
TOTAL	2,182	1,839	2,014	952	757	505	738
Diving Ducks							
Redhead	0	4	2	1	0	0	0
Canvasback	0	0	0	0	0	1	0
Lesser scaup	22	2	12	2	3	5	3
Ring-necked duck	468	123	296	92	35	11	47
Common goldeneye	0	4	2	5	0	1	2
Bufflehead	0	2	1	7	0	1	3
Ruddy duck	5	2	4	0	0	0	0
TOTAL	495	157	317	107	38	19	55
Hooded merganser	24	6	15	7	9	14	10
Other ducks	19	16	18	0	0	0	0
All Species	2,721	2,019	2,364	1,067	804	538	803

Table 23. Harvest of ducks by species at Oakwood Bottoms in the Southern Zone (Illinois, 1974-1976 and 1980-1982). Oakwood Bottoms is a greentree reservoir, where 96% of the ducks harvested are mallards or wood ducks. Data from the U.S. Forest Service.

Species	Zoning Not in Effect				With Three Zones			
	1974	1975	1976	Mean	1980	1981	1982	Mean
Mallard	6,157	5,568	2,700	4,808	393	686	162	414
Wood duck	1,057	2,109	914	1,360	400	734	898	677
Other ducks ^a	136	759	58	318	22	38	35	32
Total	7,350	8,436	3,672	6,486	815	1,458	1,095	1,123

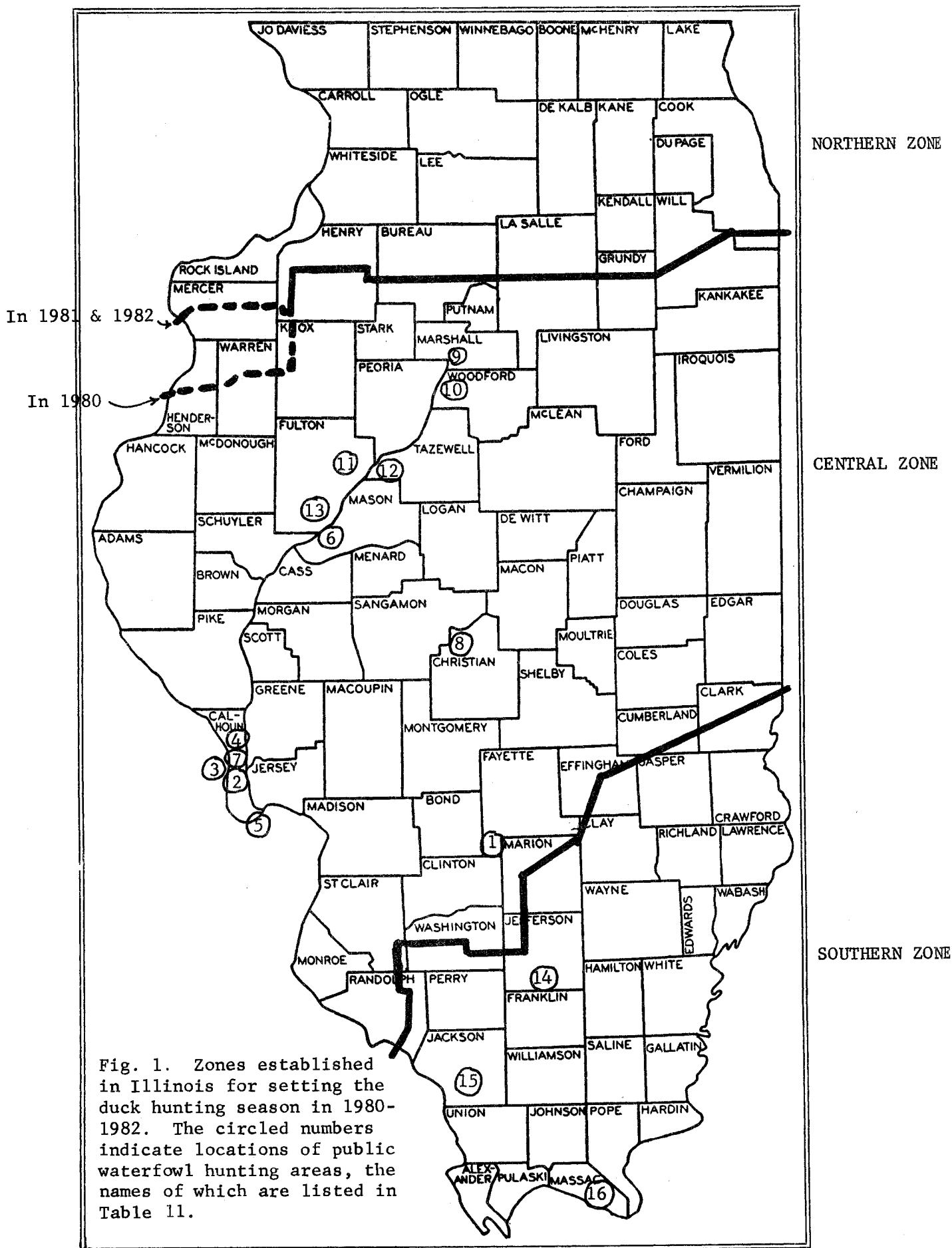
^aIncludes black duck, teal, pintail, gadwall, wigeon, and shoveler.

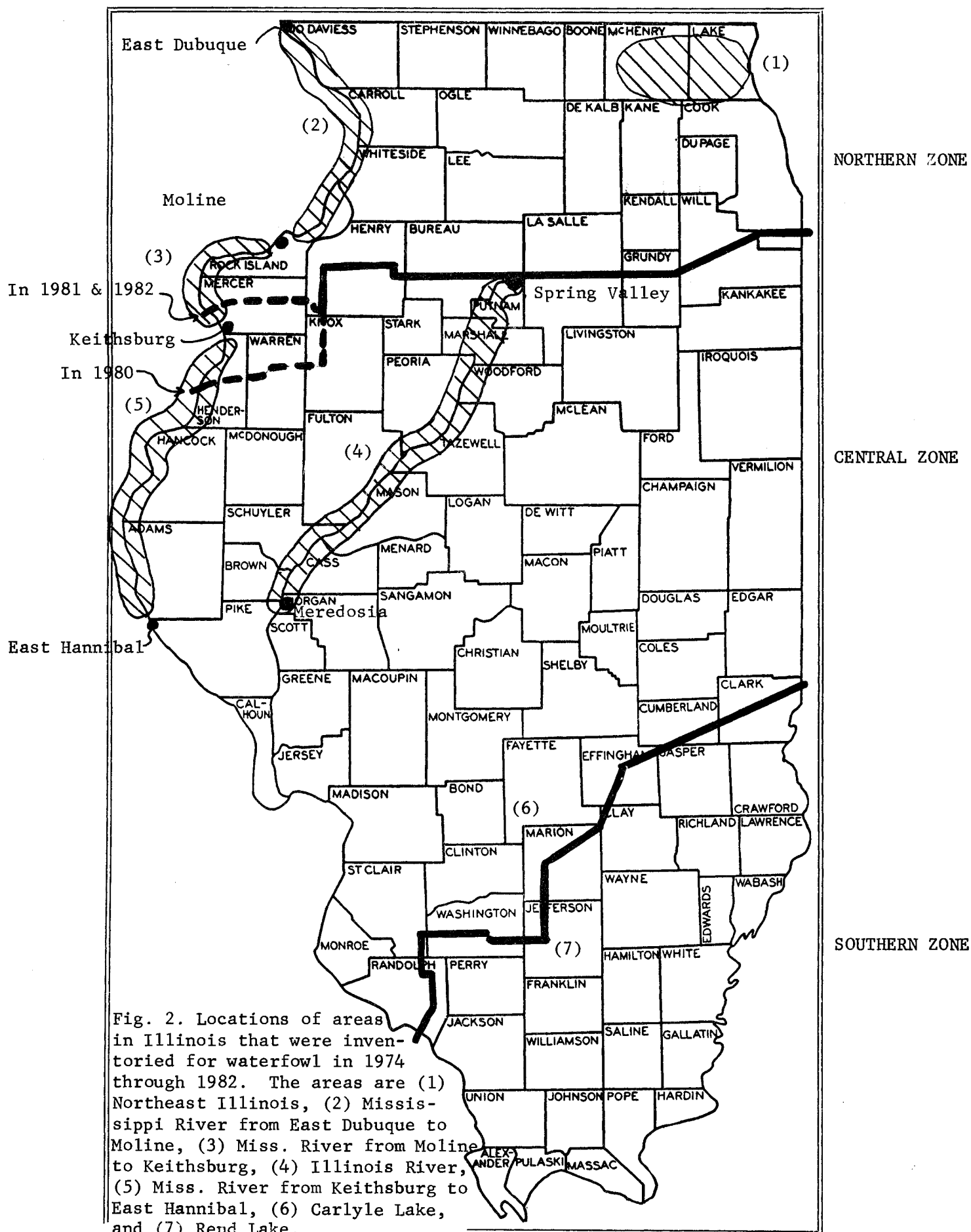
Table 24. Percent change in harvest of key species of ducks in Illinois during 2 years of experimental zoning (1980-1982) relative to 3 years without zoning (1974-1976), as indicated by 3 different criteria.

Species	FWS Surveys	DOC Areas	DOC Surveys
<u>NORTHERN ZONE</u>			
Mallard	+30		
Black duck	-18		
Wood duck	+43		
Redhead	-11		
Canvasback	+178 ^a		
Other species	+48		
All Species	+36		+18
<u>CENTRAL ZONE</u>			
Mallard	-12	-17	
Black duck	+19	-32	
Wood duck	+46	+40	
Redhead	+69	+134	
Canvasback	-40 ^a	-8	
Other species	+8	-19	
All Species	+1	-2	-5
<u>SOUTHERN ZONE</u>			
Mallard	-46	-55	
Black duck	-37	-14	
Wood duck	-35	-39	
Redhead	-66	+925 ^b	
Canvasback	-24 ^a	-43	
Other species	-51	-37	
All Species	-46	-49	-53
<u>ENTIRE STATE</u>			
Mallard	-9		
Black duck	-11		
Wood duck	+28		
Redhead	+38		
Canvasback	-43 ^a		
Other species	+4		
All Species	0		-8

^aChanges relative to 1976 only. Canvasback were protected statewide in 1974 and 1975.

^bBased on an increase from 4 to 41 redhead.





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